WHAT IS CLAIMED IS:

1. A linear actuator at least comprising:

a power set having a motor for outputting torque and further having a first stage reduction device;

an actuator having a spindle and threaded nut for enabling an output shaft coupled with the threaded nut to axially reciprocate, whereby to effect movement of the objects to be operated;

a transmission means for second stage of decelerating the output of the power set and then transmitting the torque to the actuator;

a sleeve axially coupling to the power set as well as the actuator, the power set, the transmission means and the actuator being coupled together in the sleeve, whereby to cut down the volume of the linear actuator as well as its install space, meanwhile, the sleeve bearing the axis force so as to enable the transmission means to transmit torques smoothly and effectively.

2. The linear actuator as claimed in claim 1, wherein the power set is provided with a cap for axially coupling to the sleeve.

3. The linear actuator as claimed in claim 1, wherein the actuator has a coupling portion for coupling with an engaging portion of the sleeve.

4. The linear actuator as claimed in claim 1, wherein the transmission means is coupled with the actuator in the sleeve in a coaxial way so as to transmit torque.

5. The linear actuator as claimed in claim 1, wherein the transmission means has a transmission portion in form of hollow slot, at the outer surface of the transmission portion is provided with a torque spring having an inward chamfer defined at the front and rear ends respectively for engaging with transmission portion.

6. The linear actuator as claimed in claim 1, wherein the power set is coupled with the transmission means in the sleeve by virtue of planetary gear structure, such that not only carry out the second stage reduction but also make it possible to equally disperse the torque so as to enable the torque transmission to be performed in a most effective way of outputting greatest torque with smallest volume.

7. The linear actuator as claimed in any one of the claim 1 to 6, wherein the parts of the linear actuator in accordance with the present invention are mainly round-shape designed so as to facilitate the processing, and the round-shape parts may be coupled in a coaxial manner, such that substantially brings down the vibration as well as the noise, and meanwhile increases the assembling efficiency.